Engineering With Nature Project Fact Sheet

Environmental Pool Management: An EWN Innovation for Advancing USACE Water Operations Practice

Background

The U.S. Army Corps of Engineers (USACE) water projects disturb natural hydrology to achieve specific operational objectives related to flood control, navigation, hydropower, water supply, and recreation. However, USACE could more widely use environmental pool management (EPM) to manage reservoir and navigation pools, increasing wetland habitat value while maintaining safe navigation and managing flood risk. Projects that have stable water levels for the growing season and a high level of control can achieve greater ecosystem goods and service (EGS) benefits from EPM. EPM can be very cost-effective by increasing EGS benefits simply through planning and implementing new operating rules as reservoir water control manuals get updated. As part of this research task (RT), we will review alternative water management strategies through environmental flows planning to help restore natural watershed hydrology. The water-quality benefits from EPM best practices remain a substantial data gap. This RT will help increase awareness of the opportunities for EPM and direct USACE lake managers to apply EWN principles to facilitate their planning. Additionally, this RT will develop the water quality data to confirm related EGS benefits.

Objectives

The primary objectives of this RT are to communicate the benefits of EPM practices at Lake Red Rock, Iowa**,** to other USACE projects and to evaluate water-quality parameters and denitrification rate response to EPM. This RT adds value by supporting EPM coordination and communication across USACE business lines and research programs.

Approach

The overall approach will be to improve the communications via graphics and narrative for an existing Lake Red Rock EPM conceptual model. We will utilize still images in static PDF documents and animated images for video productions. Time lapse videography will be posted on the EWN web page. Infographic communications targeting Command level staff will include aerial imagery, ground photos, and graphics. Rapid communications will target USACE lake managers, district Operations Chiefs, and Command Staff responsible for water management decisions. These visuals will be posted on the EWN website and in other web-based venues.

Outcomes

The benefit of this research to the U.S. public is increased EGS outputs for low or no cost without impacting water operations project objectives. Water management experience gained at Lake Red Rock will be transferred to achieve similar positive outcomes at other lakes. Deliverables from this RT will capture the triple-win elements of engineering, environmental, and social benefits derive from sustainable EPM practices.

Photo: Alton Lake in lower Pool 26 on the Mississippi River in August 2017. Mature annual vegetation with seedheads of native Walter's millet (*Echinochloa walteri*) provide forage for migratory waterfowl and enhanced habitat for other wildlife. (Photo by Ben McGuire, USACE St. Louis District)

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